

REGULATIVE EFFECT OF DODDER (*CUSCUTA NEVADENSIS* JTN.) ON THE VEGETATION OF THE NORTHERN MOJAVE DESERT

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ABSTRACT.— On two separate transects in the Rock Valley area of the northern Mojave Desert in the spring of 1976, 4 percent to 17 percent of the perennial plants were infested with the parasite *Cuscuta nevadensis* Jtn. (dodder), and dead pieces of dodder from previous years were on dead plants equivalent to another 5 percent, indicating that the dodder had a regulating effect on the plant population and may be an important cause of perennial plant death.

Dodder (*Cuscuta nevadensis* Jtn.), a yellow-orange parasitic vascular plant, is common in the northern Mojave Desert (Beatley 1976). A previous study indicates its presence on 16 different perennial plant species and its ability to kill the host plant and consequently influence the ecology of an area was recognized (Wallace and Romney 1972). The biological characteristics of the genus *Cuscuta* have been recently reviewed (Ashton 1976).

In a 50 × 2 m transect made near Rock Valley, Nevada, in the spring of 1976, 93 living perennial plants were present: 16 of these were infested with dodder (17 percent). Some of them were so badly infested that death of the host was certain (Fig. 1). Two dead plants were also observed in the transect with pieces of dead dodder attached. The numbers infested by species were: *Grayia spinosa* (Hook.) Moq. (6), *Ambrosia dumosa* (A. Gray) Payne (3), *Ceratoides lanata* (Pursh) J. T. Howell (1), *Lycium pallidum* Miers (5), and *Psoralea fremontii* (Torr.) Barneby (1). All these species were found to be infested in the previous study.

Another transect (100 × 2 m) contained 8 plants with live dodder and 10 dead plants apparently killed by dodder because pieces of dead dodder were attached to them. This

transect had approximately 4 percent infestation and a 5 percent kill from a previous year.

A 5 percent shrub mortality per year is greater than average if many of the plants live 20 to 100 years, as believed (Wallace and Romney 1972). The effect of dodder then, at least in some years, is important wherever infestations occur. The prevalence of dodder is related to the soil-moisture conditions; therefore, its impact varies from year to year. It grows abundantly in spring seasons with relatively cool temperatures. We had postulated that an intensive kill of shrubs could revert such areas into grassland, at least until the perennial shrubs became reestablished. The incidence of dodder then may favor the establishment of grasses. The relative importance of dodder and rodents as regulators of perennial plant populations is a subject of continuing interest.

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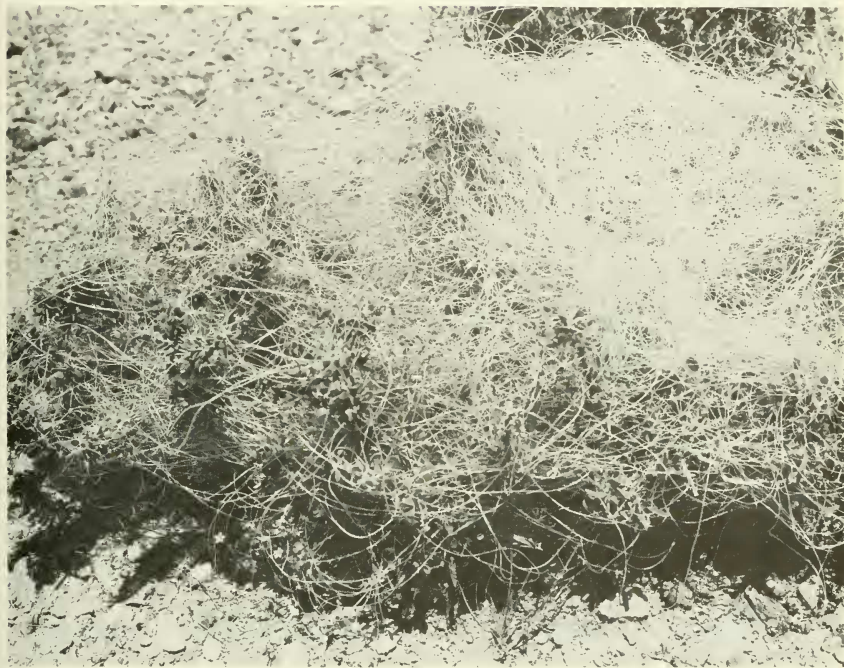


Fig. 1. *Lycium pallidum* plant heavily infested with *C. nevadensis* in the spring of 1976.